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ENVIRONMENTAL IMPACT STATEMENT

SARPY CREEK LINE

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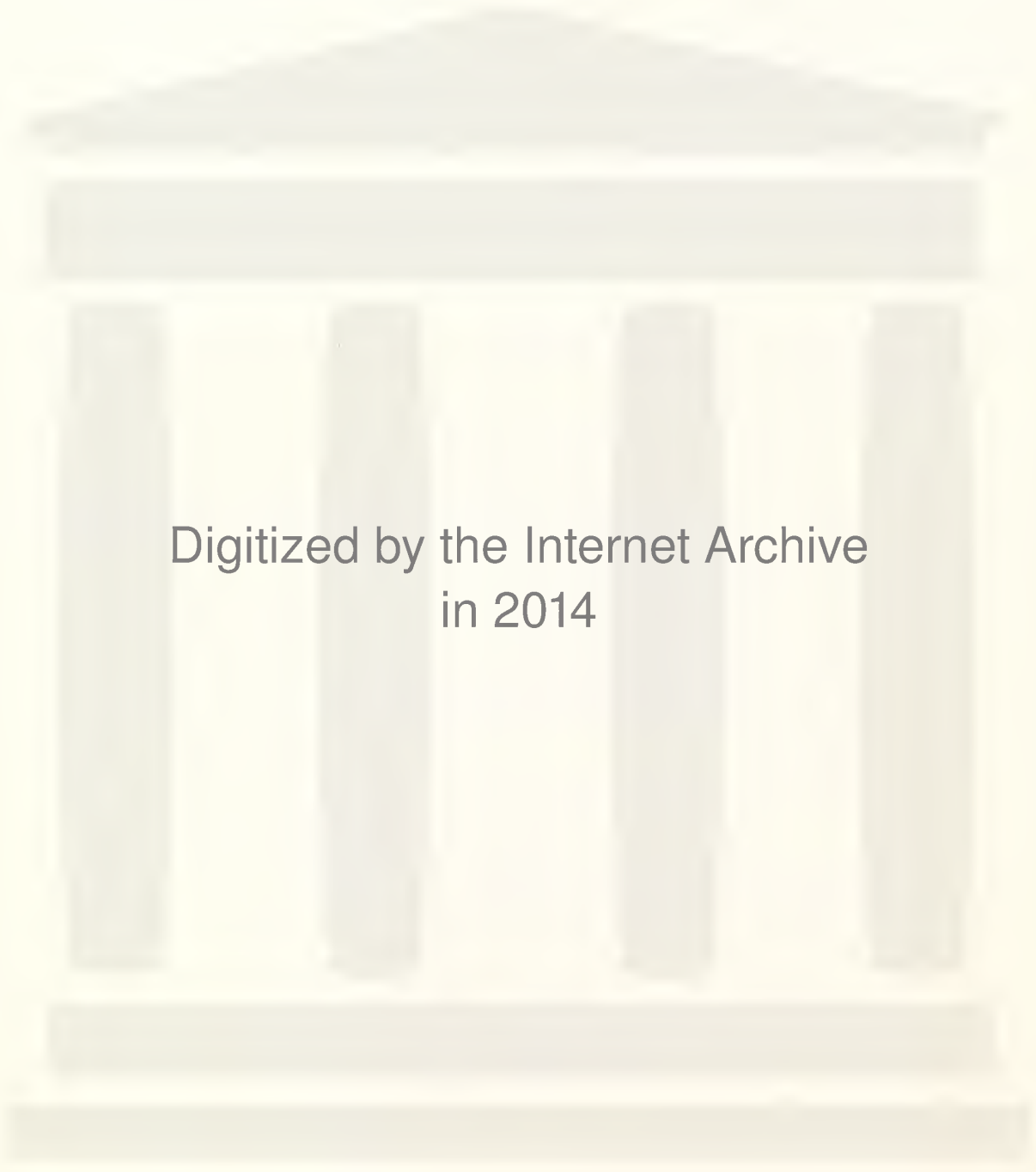
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Description of Proposed Action

Burlington Northern Inc. proposes to construct and, operate a new line of railroad as a branch line to serve Westmoreland Resources' coal mine located in Big Horn County, Montana. The new line will originate from Burlington Northern's main line at a point approximately two miles west of Sanders, Montana, and, in general, follow along Sarpy Creek a distance of 36 miles to the coal mine loading site. Upon completion of construction of the branch line and loading tracks unit train loads of low sulphur coal will be hauled from the new coal field of Westmoreland Resources to electric power-generating plants located in the midwest. It is initially planned to operate one 110-car train five days per week each way over the branch line. Contracts have been signed to supply 76.5 million tons of coal over a twenty year period to Northern States Power, Wisconsin Poer & Light, Dairy Land Power Cooperative and Interstate Power Company. The coal reserves have been leased from the Crow Tribe of Indians who will receive royalties on all coal mined. Westmoreland was the high bidder on the approximate 34,000 acres under mineral lease.

In addition to the outbound coal traffic beginning in June of 1974, there will be inbound movement of material and supplies for the mine.

General Description

The new branch line located wholly within Montana, will be a single track railroad and as heretofore stated, will originate in Treasure County at a connection with Burlington Northern's main line approximately two miles west of Sanders, Montana and will extend in a southerly direction, paralleling Sarpy Creek, a distance of about 36 miles to Westmoreland Resources coal mine in Big Horn County. The line is shown on the location map marked Exhibit "A" and on the location map marked Exhibit "B", both attached hereto and by this reference made a part hereof.

Detailed Description

The branch line will be built with continuous welded 112 lb., 131 lb., and 132 lb. rail on treated crossties spaced in accordance with Burlington Northern general railroad construction standards. Elevation of the branch line track at its origin point where it will connect to the main line is 2610 ft. above sea level. Elevation of loading track at mine site will be 3480 ft. above sea level. Maximum or ruling grade will be 1.00% against loads and 1.25% against empties. Total volume of excavation in construction of the line is estimated at 3,300,000 C.Y. Total amount of embankment fill is estimated at 3,550,000 C.Y. The branch line right-of-way will vary from 100 to 275 feet in width. There will be two sidings each 7400 ft. long, one at MP 19.0 on the branch and the other adjacent to the mine loop or loading track. A short spur track, 500 ft. long, will be located at MP 11.4 on the branch.

The branch line will cross U.S. Highway No. 10 at grade at MP 0.14. Automatic flashing light railroad-highway crossing signals will be installed to protect the crossing. An underpass grade separation structure will be constructed under U.S. Highway No. I-94 at MP 2.5 on the branch and five County and State secondary railroad-roadway crossings at grade will be provided.

A 73"x45" reinforced concrete pipe arch structure with flared ends will be installed at each of the three crossings of the Hysham Irrigation Canal. A five-span pile trestle bridge will be constructed at the Yellowstone Irrigation Canal crossing. Bridges will be constructed over Sarpy Creek, Beaver Creek, Bear Creek, Horse Creek and two unnamed creeks, one at MP 9.2 and the other at MP 20.1 on the branch. In addition there will be a number of 5'x7' reinforced concrete cattle passes placed at various locations as required by owners of abutting property through whose lands the branch line will extend.

Two-hundred thirty culverts will be placed to control and implement surface drainage. Six irrigation ditch syphons will be installed. The culverts and bridge structures to be constructed have been designed on the basis of 50 year flood criteria. An estimated 15,000 cubic yards of riprap will be used to prevent erosion adjacent to bridges and culverts.

State School Land - The proposed rail line will cross State School Lands, namely Section 16, Township 3N, Range 37E, and Section 16, Township 2N, Range 37E, both in Treasure County.

In the said Section 16, Township 2N, Range 37E the proposed length of branch line track to be constructed across State School Land will be 5,478.03 ft.; also a set out track 500 ft. long; there will be no sidings in the section. Maximum cut for track roadbed will be 16 ft. and maximum fill 17 ft. There will be no bridges over, nor channel changes in Sarpy Creek in said Section 16. It is proposed to construct 10 culverts varying

in size from 24 inches to 78 inches in diameter to control drainage. The track as it extends across said Section 16, will in general, follow the east side of Sarpy Creek out in the open on the hillside away from creekbed area. Total width of right-of-way is 150 ft.

In the said Section 16, Township 3N, Range 37E the proposed length of branch line track to be constructed across State School Land will be 4,888.75 ft.; there will be no siding track or setout track. Maximum cut for roadbed will be 34 ft. maximum fill 26 ft. There will be no bridges nor will there be any channel changes in Sarpy Creek as it extends through said Section 16 in Treasure County. It is proposed to install 5 culverts varying from 36 inch to 84 inch diameter to control drainage. Maximum total width of right-of-way will be 200 ft. The trackage will be located on the hillside on the east side of Sarpy Creek.

General Economic Effects

There are and will be positive economic and monetary benefits to the members of the ranching and agricultural community who have sold land to Burlington Northern for use as branch line right-of-way and to those who have sold land to Westmoreland for loop track right-of-way and mining purposes. It is understood purchases of land by the mining interests include lease back option, permitting the seller to continue ranch or agricultural operations from an improved economic basis.

Purchase of railroad right-of-way by Burlington Northern will not preclude the ranching and agricultural community from making normal use of their property. Steady employment opportunities near the home will be created through railroad and mine plant operations where now only few limited opportunities exist. It is also contemplated that business opportunity in goods and services will result from the railroad and mining operations.

Surrounding areas could benefit considerably through the generation of new business. Demand for supplies and services will result in increased employment. Economics in the area should improve through the creation of approximately 125 new permanent jobs that would comprise the mine labor forces and approximately eight new permanent jobs which would comprise the additional railroad forces.

In addition to such permanent benefits, there will be temporary benefits from the establishment of approximately 200 temporary jobs during railroad construction. Of the 200 temporary positions 175 will be filled from local trade union personnel, the remaining would be administrative personnel.

Temporary positions for mine plant installations are estimated at 125 of which 100 would be filled from local trade union personnel.

Studies conducted by the Bureau of Business and Economic Research of the University of Montana indicate 2.47 jobs are created through other services for each permanent job in the mining and manufacturing industry. Mine and railroad labor forces of approximately 133 and ancillary jobs would total 364 new jobs. The total combined labor force increase would be approximately 480.

Mining and railroad employment created by establishment of the Westmoreland Resources mine will add to diversification of industry for Big Horn County which presently is primarily agricultural. Benefits to the county, state and federal governments would accrue from an increased tax base. Other benefits to the surrounding area would result from increased requirements for municipal services, police and fire protection, telephone, roads and bridges, and rail service.

Employment and Payroll

As previously set forth, Westmoreland's mining plant installation will provide approximately 125 jobs through the mining contractor and the railroad would provide in the long term approximately 8 new positions. Based on 1971 statistics of the Department of Labor Statistics, these jobs will generate a gross payroll of approximately 1.1 million dollars annually. After deducting state and federal income taxes this payroll should result in approximately $900,000 of disposable income annually. Each new job is worth more to local economy than its salaried amount since monies are spent generating additional jobs and income. This phenomenon known as the multiplier effect, multiplies the disposable income from 3 to 12 times for every dollar spent. If for instance a multiplier of 3 is used, new jobs should generate approximately $2,700,000 in disposable income. This disposable income will be spent in a broad market area, and not in just a single county. These statistics do not take into account royalties which would further enhance local economics. Projection of these economics reveals creation of lifetime employment since the expected duration of the project is at least 75 years and should not be subject to significant layoffs since it is backed by long term sales contracts. Jobs will be filled to the extent feasible from local labor forces which will not create a large population explosion upon county facilities as has been feared by some.

Taxes

The entire project will boost taxes paid to the state of Montana by an estimated $500,000 annually. In Big Horn County where the railroad and mine are located, they will receive an increase in property tax revenues, but at the present, it is not possible to estimate the magnitude of such property taxes.

Topography

The branch line will generally parallel Sarpy Creek as it traverses Townships 1 and 2 North, Range 37E in Big Horn County and Townships 3, 4, 5 and 6 North, Range 37E in Treasure County.

Sarpy Creek extends in almost a straight line northward through Range 37E to its junction with the Yellowstone River. Tributaries of Sarpy Creek, namely, West Corral Creek, West Bear Creek, West Beaver Creek, West Passage Creek, Rainwater Creek, Pleasant Creek and Spring Creek, named in the order of their distance from its mouth, enter Sarpy Creek from the west. East Corral Creek, East Bear Creek, East Beaver Creek, Horse Creek and East Sarpy Creek enter in the same order from the east. None of the tributary streams is more than 5 or 6 miles long except East Sarpy Creek which is a perennial stream although the flow diminishes markedly during the dry season. Sarpy Creek has formed flood plains ranging in width from three-quarters of a mile to 1-1/2 miles, and along its tributaries there are numerous small flat bottoms.

In said Townships 1 and 2 in Big Horn County, the flat bottom valleys of Sarpy Creek and East Sarpy Creek are bordered by steep slopes. On top of the slopes there is a rolling up-land

area. In the southern part of Township 3, Treasure County, Sarpy Creek occupies a shallow box canyon but in the northern part of the township the valley is wider and its slopes are considerably higher. In said Township 4 except for narrow strips of flood plains in Sarpy Creek and four tributaries t he land is broken and the topography is rough. In said Township 5, the country is broken and outside of the flood plain of Sarpy Creek which is 1200 to 1800 feet wide, there is practically no flat land. The Yellowstone River flows across the extreme northern part of said Township 6 and Sarpy Creek occupies a broad flat bottomed valley as it flows into the Yellowstone River.

Geologically speaking, in said Townships 1 and 2 in Big Horn County and said Sections 3 and 4 in Treasure County, the Fort Union formation is exposed throughout the area and overlies the Lance formation. In said Township 5, the oldest formation at the surface is the Bearpaw Shale, with the Lance formation consisting of sandstone and shale overlying the Bearpaw. In said Township 6 the Bearpaw Shale is the oldest formation at the surface over most of the township, except where it is covered by a mantle of quaternary alluvium.

Climate and Basic Business Data

Climate

In the project area the climate is warm and dry in summer and cold in winter. Actual precipitation averages 12 inches in Treasure County and 14 inches in Big Horn County. The average daily maximum temperatures for July is about 90° while the average minimum is 60°. The average daily maximum temperature for January is 27° and the average minimum 6.0°.

Winter air masses of Arctic origin move through the area, followed by periodic Pacific "chinook" winds which modulate temperatures. Spring and summer winds are generally from the southwest quadrant with an occasional intrusion of very dry polar Canadian air.

	Hysham 1961 - 1971
Annual precipitation (Average)	13.58"
Annual precipitation (Range)	11.12" - 15.90"
Growing Season precipitation (Average)	10.22"
Growing Season precipitation (Range)	8.06" - 13.68"
Growing Season days above 32°F.(Average)	127

Basic Business Data

The County Seat of Big Horn County is Hardin, Montana and the main trading area is Billings, Montana, and major trading area Spokane, Washington. Land area of Big Horn County is 5023 square miles and population as of April 1, 1970 was 10,057. The County's population density is 2.02 persons per square mile. There are 588 farms or ranches in the county and the total value of the agricultural products sold, based on 1964 data, was $10,681,000.

The County Seat of Treasure County is Hysham, Montana and the basic trading area is Billings, Montana and major trading area Spokane, Washington. Land area of Treasure County is 985 square miles and the population as of April 1, 1970 was 1,069. The county's population density is 1.08 persons per square mile. There are 129 farms or ranches in the county and the total value of the agricultural products sold, based on 1964 data, was $2,978,000.

Sarpy Creek Bridge and Flood Design

The railroad is not being built on a flood plain as the route was selected to minimize the effect on adjacent land owners. High water levels during 1971 were observed by field personnel and grades established so as to be above the flood plain, thereby precluding damage to railroad property and those of the adjacent land owners. With the exception of where the route crosses Sarpy Creek on the Garverich property and the route between the main line and the Miller property, the roadbed of the branch line is not involved in the flow of Sarpy Creek in its normal course or at flood levels.

The crossing of Sarpy Creek on the Garverich property was designed pursuant to Montana State Hignway Department requirements which were furnished to Burlington Northern on March 13, 1972 and exceed the specifications outlined for construction of the Interstate Hignway I-94 span over Sarpy Creek.

The Interstate Highway span over Sarpy Creek considered a 50 year design discharge of 4000 CFS from a drainage area of 471 square miles and was used to obtain a design stage elevation of 2655.30. The flow line elevation at bridge site is 2645.9 feet. The width of the channel at the flow line is 50 feet and the embankment slopes

are on a 2:1 ratio. The bridge has three spans with two intermediate bents. The construction data based on dual intermediate bent structures provides an estimated increase in back water of only 0.1 feet, or total back water produced between the two structures of only 0.2 feet. The velocity at flood stage is 5.9 FPS.

Implementation of the Floodway Management and Regulation Act was considered in the design of the bridge over Sarpy Creek and Burlington Northern's design would be compatible with Floodway Management standards. Essentially implementation of the Floodway Management and Regulation Act standards would require that drainage structures be designed to discharge the estimated 50 year flood without creating a significant increase in up-stream flood elevations. The maximum permissible back water effect should be limited to one foot. Burlington Northern design exceeds the State's design for construction of the Interstate Highway I-94 bridge over Sarpy Creek and far exceeds the specifications of the Floodway Management and Regulation Act. Construction of Burlington Northern bridge will not obstruct Sarpy Creek and will not increase erosion over what normally occurs.

State Department of Highways Proposed Railroad Crossings

Burlington Northern's plans for all proposed highway-railway crossings, six in number, include provisions for unobstructed visibility at the crossing in each of the four quadrants for a planned train speed of 35 miles per hour and a highway speed of 45 miles per hour. Six drawings showing the layout of the six crossings are hereto attached. Said speeds will require unobstructed visibility within a distance on the highway of 360 feet from the crossing to a point on the track 350 feet distant from the crossing. Said plans, in each instance where inadequate sight distance was found, include excavation or day-lighting as necessary within the sight distance triangles.

The comments by the Montana Department of Highways indicate a design highway speed of 50 miles per hour. Minimum highway stopping distances will be obtained from the Department of Highways and the dimensions of the sight distance triangles within which we will excavate will be increased accordingly as necessary to provide unobstructed visibility at each of the six crossings.

Burlington Northern's comments for each of the six crossings follow:

1. Cramer County Road Crossing (Milepost 1 + 1811.5)
Drawing shows this crossing at railway survey station 70 + 91.5.

Proposed excavation will be increased to provide adequate stopping sight distance for eastbound and westbound road traffic at 50 miles per hour. The elevation of the road will be raised approximately 4.5 feet at the crossing and the approaches to the crossing will also be raised to provide a gentle approach.

2. Site Number 3 - The Most Northerly Secondary Road Crossing (Milepost 4 + 331)
Excavation will be increased to eliminate sight restrictions for a highway speed of 50 miles per hour. The highway surface will be lowered 0.9 feet at the proposed grade crossing.

3. Site Number 2 - The Middle Secondary Road Crossing (Milepost 9 + 5104)
As previously indicated, Burlington Northern will excavate to provide adequate unobstructed sight distance for a highway speed of 50 miles per hour and will relocate the highway on the east side of the crossing to provide a tangent approach to the crossing. This will provide a section of highway adjacent to the crossing on both sides of the track on which there will be no cross slope. The entire curve east of the crossing will be provided with the proper superelevation and alignment acceptable to the Department of Highways.

4. Site Number 1 - The Most Southerly Secondary Road Crossing (Milepost 18 + 1267)

As previously indicated Burlington Northern will increase the proposed excavation to provide sufficient sight distance for a 50 mile per hour highway speed at this crossing, and will relocate a portion of the highway east of the proposed track to provide a tangent approach to the crossing. This would eliminate curvature and superelevation on the highway through the crossing area which will raise the highway 2.45 feet at the crossing and will provide gentle highway approaches.

5. The Wilson County Road Crossing (Milepost 22 + 2911)

The prints show this crossing at railway survey station 1190 + 71.

Excavation will be increased for stopping sight distance to provide for a 50 mile per hour road speed. The plan is to raise the road 10.59 feet at the crossing. The resulting adjustment in the road crossing approaches will provide a nearly level road approach east of the crossing. This will reduce the difficulty in stopping for highway traffic approaching from the east.

6. County Road Crossing (Milepost 27 + 3331)

This crossing is shown on the print at railway survey station 1458 + 92.6.

The sight distance in all quadrants will be adequate without the need for grading and the road will be raised 4.43 feet at the crossing with a level east approach and a gentle approach grade from the west.

Consideration for the installation of signals at these crossings has yet to be determined, although signals will be installed at locations where the State determines they are warranted. If luminaires are warranted at the crossings which are not signalized, Burlington Northern will install them.

Abandonment of Rail Operations

Abandonment of the branch line after mining ceases will no doubt result in reversion of the right-of-way property to its present use. Such will be accomplished by removing the track in its entirety and removing all bridges and drainage facilities. At the time of construction of the branch line, the right-of-way, with the exception of that occupied by the track structures itself, will be seeded and thus upon abandonment reversion to its present state will have been implemented.

Alternate Route Considerations

Alternate routes for the line to be constructed to serve the Westmoreland mine site were considered, namely, a route utilizing in part Burlington Northern's existing Sheridan Line extending through Hardin, Montana. Revisions of the selected Sarpy Creek route shown on Exhibit "A" were also studied by Burlington Northern engineers. Such studies were made by use of U. S. Geological Survey maps and on the ground observations. Analysis of the routes to the Rosebud Branch and the Sheridan Line revealed grading quantities would be considerably greater which would necessitate acquisition of more property, greater disruption of the adjacent lands and more detrimental effect on the environment. The route to Colstrip would result in removal of trees, crossing of various drainage areas and greater disruption and elimination of agricultural lands. The terrain between Colstrip, Montana and the Westmoreland Resources' mine site as well as between Hardin and the mine site, is such that high fills and deep cuts would be required for its construction. Were the line to Colstrip utilized, it would in addition necessitate the construction of a tunnel. The deep cuts and fills would more significantly effect the environment and wou necessitate depositing of waste materials on agricultural and grazing lands. Construction of the tunnel would necessitate

depositing of waste materials on adjacent lands and would affect the tracts of ponderosa pine stands which although they range from sparse to relatively dense entanglements, such deposits would prove detrimental.

Studies of the revisions of the selected route shown on Exhibit "A", revealed that each proposed revised route would affect adjacent property owners adversely to a greater degree than the chosen route and such changes were deemed to be more detrimental to the environment. Initial studies for crossing Interstate I-94 by construction of an overpass on the east side of Sarpy Creek revealed disruption of considerably more agricultural lands in addition to elimination of more grazing lands. Review of the overpass plan revealed considerably more detrimental effects to the adjacent property, the environment and adverse economics, and the decision was made to construct under the Interstate Highway as per the selected route.

Studies were also made of crossing Sarpy Creek south of the selected route on the Ballard property and south of the selected route on the Williams property, both of which properties are located in Exhibit "A". Such routes, it was developed, would prove to have a more detrimental effect on bottom land. The selected route at the point where it crosses Sarpy Creek on the Garverich property disturbs approximately 1800 feet of bottom

land, whereas crossing on the Ballard property would disturb approximately 2500 feet and on the Williams property approximately 3500 feet of bottom land. In addition, any crossing of the Ballard and Williams property would be at a higher elevation, necessitating acquisition of additional right-of-way and, in the case of a crossing on the Williams property, would result in bisecting the property and inflict serious damage thereto, reducing its usefulness as ranch land. Each alternate route studied revealed more significant effects to the environment than that of the selected route.

General Land Use and Wildlife Habitat

The rural population of Treasure County is approximately fifty-nine percent of the total population of the County. Farms and ranches occupy ninety percent of the county land area. Pasture land comprises eighty-five and one-half percent and crop lands four and one-half percent. Crop lands being irrigated lie mostly along the Yellowstone River.

In Big Horn County, farms and ranches occupy approximately eighty percent of the land area of the county. Crop lands comprise five percent of the total with one and seven-tenths percent being irrigated; pasture lands comprise seventy-five percent.

The entire right-of-way for the branch line extending from the main line to the switch for the loop track will consist of approximately 725.6 acres. Except for approximately 50 acres, the major portion of the railroad right-of-way will be located in a non-irrigated section, and, therefore, will affect very little crop land. The railroad right-of-way area is presently used primarily for pasturing beef cattle breeding herds. The entire right-of-way would utilize and remove from its present use approximately one section of land. The normal carrying capacity of non-irrigated eastern Montana range land is 15-20 animal units per section. Accordingly, the elimination of this land for grazing purposes would have minimal impact on the livestock economy of the counties involved.

Drainage area of Sarpy Creek was calculated to be approximately 471 square miles or 301,440 acres. Right-of-way acquisition through the area would amount to approximately 0.0024% of the drainage area.

Present use of the Sarpy Creek drainage area can be divided into three categories namely; growing timber, native grassland and tilled or cultivated crops. Approximately 10% to 15% of the area is presently devoted to the production of hay and grain requiring tillage so the natural plant succession has been disturbed. Abandoned tilled land which permits natural vegetation exhibits varying degrees of succession toward climax conditions and it is felt may be considered with native grassland although productivity may not be obtained to a level comparative to native grassland. Grasslands comprise the larger portion of the acreage of the selected route right-of-way.

However, approximately 1% of the southerly most portion of the right-of-way for the selected route is supporting trees and therefore could be considered timber stand. These stands range from sparse ponderosa pine to somewhat dense entanglements, which provide adequate coverage for wildlife. An extremely small amount of the timbered area consists of stream bank deciduous trees located in the vicinity of the Sarpy Creek crossing on the Garverich property and the crossing of the east fork of Sarpy Creek.

The entire drainage area may be divided into five habitat types for convenience in describing plant and animal life. These are the stream bank, the steep dry side hill areas, the grassland, the timber type and the disturbed area used for hay and grain production. These habitats are used to a varying degree by wildlife and domestic animals for feed and shelter. The stream bank area is a relatively narrow strip of vegetation closely paralleling the Sarpy Creek and is characterized by boxelder and other growths such as thorn-apple, chokecherry and gooseberry. It is dominated by grasses such as bluegrass, foxtail, cattails and nettles. The plant life in the area is heavily dependent upon accumulation of waters at or near the surface of the ground.

The steep dry side hill area is found on the east and west sides of the Sarpy Creek valley. The railroad will be constructed principally along the east side hill slope. The east side is dominated by wheat grass, needle and thread, side oats gramma and cheat grass. Occasional pine trees may be found toward the south and on the east slope, and cactus is common on these sites.

The grassland area is the most extensive vegetation cover. It includes native grassland areas and areas of disturbed soil that are being revegetated through natural processes. Slopes generally are not severe and may face

in several directions. There is no tree overgrowth in these areas although an occasional ponderosa pine may be found. Grasses throughout this area may be characterized as both warm season and cool season grasses and are found intermixed throughout.

The timber area at the extreme south end of the selected route is dominated by stands of ponderosa pine which vary from dense thickets, to medium age stands, to thinly populated stands of old trees and are open and contain a well developed shrub layer. While there does not appear to be a definite division between the grassland and timber areas, they may be arbitrarily separated by the present varying overgrowths. Forbs are important in the timber stands because of use by deer and birds. Observation of the timber stands through the right-of-way area would indicate there is very little marketable timber along the selected route.

Fence along right-of-way will not effect wildlife. Agreements with adjacent property owners during negotiations for purchase of right-of-way have committed Burlington Northern to generally constructing a hog tight fence 4'-5½" high on both sides of the right-of-way. Both mule and whitetail deer have no difficulty jumping fences 4 to 5 feet in height. On Burlington Northern's Gillette Branch mule deer move regularly across the tracks from

range to stock tanks for water. These deer cross up to five fences each way, probably daily, some being five feet high. This same area in northeastery Wyoming has one of the world's largest concentrations of antelope and these animals freely cross the tracks and fences, even the woven wire type, in their normal migrations. A Montana Department of Fish & Game study, No. W-120-R-2 on fall and winter use by antelope and livestock of southeastern Montana ranges contains the statement "Fency type, classified according to penetrability by pronghorns did not appear to hamper pronghorn distribution."

Existing Wildlife

Game animals found in the Sarpy Creek area through which the branch line will extend include antelope, white tail and mule deer. The amount of forage producing land taken by the project is negligible. Crossings, cattle underpasses and bridges will aid in providing access openings across the railway right-of-way and its embankments.

Several mule deer were identified within the 36 miles of the project during the period from April 1 to October 30, 1972. White tail deer are reported to inhabit the area, but such were not identified during this period. Principal wildlife observations were made in the vicinity of the creek low lands, but some were also observed in the vicinity of the branch line by the survey crew staking the line. Only two antelope were observed during this period, but observations in more open ranges indicate the principal habitat of this wildlife was located other than along the selected route for track construction. Lack of antelope observations would indicate the area of the selected route to be of minimum habitat.

Food and cover in the ponderosa pine breaks toward the extreme south end of the proposed construction, water in the creek, and cattle watering areas would indicate the area is of relatively high value to deer, regardless of grazing by cattle.

Game birds observed in the vicinity of the proposed construction were limited to pheasants. Sharp tail grouse, sage grouse, partridge and wild turkey are reported as being in the area but none were observed during the period in question. Observation of pheasants revealed that they were generally in the vicinity of the creek bottom where there was adequate cover, however some were observed near the ranchers haystacks and where other cover was available. No observations of bird life were made along the selected route.

Numerous song birds were observed in the area, and several sightings have been reported. Identifiable birds were woodpeckers, starlings, blackbirds, meadowlarks, sparrows, bluebirds and doves. The vegetative cover on the right-of-way after seeding will provide an unmolested area for nesting and protection of the bird habitat superior to the adjacent range land. In the construction of the line, adequate crossings and livestock underpasses will provide access for rotation grazing and to watering facilities.

The only amphibians observed were frogs near bottom of Sarpy Creek. Prairie rattlesnakes were the only reptiles found, but it is our understanding blue racers and bull snakes are also present in the area.

Excellent detailed studies of inventories of big game and game birds in this area and adjacent portions of southeastern Montana have been made by the Montana Department of Fish & Game and are available to the public for consultation. One of the most recent is Project No. 2-130-R-2, in two parts dealing with antelope surveys and inventories in this hunting area.

VEGETATION

Grass land types - Grass land types of vegetation with dominant grass species in the area included, western wheat grass, blue gramma, green needlegrass, side oats gramma, sandbery blue grass, needle and thread and sedges, and bluebunch wheatgrass in the sandy silty range sites. In lesser amounts forbs and shrubs are often included in this type. There is also scattered big blues fern and Idaho fescue found generally throughout the area.

Shrub type - The dominant shrub type in the area is either big sage brush or silver sage brush and shrub species. Among this type are lesser amounts of the same grass species found in the grass land types of this area. The shrub type is most common along the creek bottom and lower drainages.

Trees - The rougher topography and steeper slopes have a scattered ponderosa pine cover and an understory of bluebunch wheat-grass. Over all vegetation on the east hill side, near the branch line is very light.

Reseeding - Burlington Northern's plan for reseeding the right-of-way area will begin with soil tests necessary to arrive at a basis for proper fertilizer application. Consideration will be given to soil type, existing fertility and annual rainfall. In the seed bed preparation the Brillion seeding method will be used on all areas where terrain is suitable and the remaining

area will be seeded by mechanical or manual broadcast, a method proven successful on railroad, highway and pipeline rights of way in Montana and Wyoming under similar soil and weather conditions.

Following construction, the entire seedbed will be disturbed and loose, so the Brillion seeding method adapts itself readily to such conditions. Fertilizer, in quantity and quality determined by the above-mentioned soil tests, will be applied prior to seeding.

Since at least one year will expire before planting can begin on this line, advantage will be taken of any information obtained on species and their relative success and failure between now and the fall of 1973 and later.

It is anticipated that Burlington Northern will use Critana Thickspike and Nordan Crested wheat in the seeding mixture. Prior to seeding, BN will seek the concurrence of this recommendation with qualified personnel at Montana State University and the Soil Conservation Service. Soil samples will be taken to arrive at the proper level of fertilization. Present investigations by Burlington Northern and conference with experienced researchers on the subject are underway.

Burlington Northern has had substantial experience in the reclamation of land and reseeding right-of-way. At the Coalstrip, Montana reclamation, Burlington Northern has been successful with

plantings and reclamation is underway.

On the Gillette Branch of Burlington Northern in Wyoming, Nordan Crested wheatgrass was planted on 15.0 miles of newly-constructed railroad right-of-way passing through terrain very similar to that at Sarpy Creek. Pictures of this operation are enclosed herewith which demonstrate the modern techniques utilized and the knowledge and experience of Burlington Northern in this area.

The anticipated seeding rate on the Sarpy Creek Branch is from 10 to 20 pounds per acre, with the rate varying specifically with each individual area requirements as to soil, moisture and topographical conditions. Approximately two years after seeding success of the planting will be determined and reseeding accomplished if necessary.

Weed Spray - Burlington Northern and all other land owners are required by state law to control noxious weeds. The rail line in question will be located in an extremely limited rainfall area and noxious weeds have not been a major problem in these areas. Noxious weed spray used by Burlington Northern to a high degree is selective, necessitated by factors other than but not excluding wildlife habitat. Burlington Northern must, and does, comply with State laws requiring removal of vegetation from right-of-way and laws, regulations and procedures governing Montana weed control districts.

RESEEDED AREA AS WILDLIFE HABITAT

Total right-of-way to be acquired by Burlington Northern for track construction from the main line to the loop track switch consists of 725.6 acres. The right-of-way is for the most part dominated by wheat grass, needle and thread, side oats gramma, cheat grass and cactus. Of the approximate 725.6 acres of grass land, cultivated land and a small portion of tree supporting area, 20% or approximately 145 acres will be occupied by the track structure itself which included the rail, cross ties, ballast and other track material. The remaining approximately 580 acres will be reseeded so as to provide wildlife habitat and to be more specific, for pheasant, as well as for grouse, deer, and antelope. Reseeding of the right-of-way should improve wildlife habitat as the areas will be adequately fertilized which should provide grass growth that would exceed existing growth and grazed lands.

Basis for such statement is that the right-of-way with the exception of that occupied by the track itself will be fenced and not subject to grazing or other depletive use of the reseeded grass.

Fertilization, as noted above, will enhance the quality and quantity of cover beyond that of adjacent non-fertilized areas. Observation of similar areas along Burlington Northern's

right-of-way indicates bird life habitually occupies reseeded plots. Since the greater portion of the Sarpy Creek right-of-way will be reseeded, juxtaposition with pheasant habitat essentials at creek bottom points should present the opportunity mentioned.

NO ADVERSE EFFECT ON WILDLIFE HABITAT

Burlington Northern asserts that construction of the branch line will not result in any substantial adverse effect on wildlife habitat.

Adverse effects on wildlife habitat which could not be avoided can only be determined by the effectiveness of re-seeding of the larger portion of the right-of-way and the effect on wildlife in the area occupied by the track structure itself. The wildlife population is not extensive and substantial areas remain for suitable wildlife habitat. Reclamation efforts in reseeding the right-of-way should prove effective in two years and provide a normal wildlife habitat. Reclamation of the track area must be deferred until abandonment of the track which would not be for approximately 75 years as economic studies indicate sufficient coal reserves are available for this period or until operation of the railroad is no longer economical.

Reclamation of the track area would then commence after the track structure, drainage facilities, and bridges have been removed. Loss of sage and ranch grass to big game is so small in relation to the total area available that it would be considered negligible. Seeding of "cuts" and "fills" adds considerably to grass plant-producing surface area and could result in a net gain for total productive surface area available for wildlife.

WATER FOWL HABITAT ON H. MILLER RANCH

Review of plats of the water fowl habitat on the H. Miller ranch reveals the area to be approximately 77 acres. Of the total acreage, Burlington Northern right-of-way will occupy 3.5 acres of approximately 4½% of the habitat. Environmental impact on the slough was taken into account in locating the point of connection of the branch line with the main line, and although an effort was made to circumvent the slough we were unable to do so without seriously damaging property of the adjacent land owners. The branch was therefore located toward the east limits of the slough and will have a minimal effect on wildlife habitat. The adjacent property owner, Mr. Miller, requested revision in draining the east portion of the bisected slough which could be accomplished by lowering the culvert under the proposed track construction. Burlington Northern committed itself to accomplishing this for the land owner.

FISH LIFE WILL NOT BE AFFECTED

There is no fish life of any consequence in the project area. Reference is made to a statement prepared by Mr. Al Elzer of the Miles City Office of the Montana Department of Fish and Game. This statement, dated September 19, 1972, indicates in part:

> "Fish populations were sampled in Sarpy Creek in the areas of the proposed railroad crossings with electrofishing gear. Cyprinids predominated the sample with suckers and green sunfish making up the remainder. Local anglers indicate that channel catfish are taken regularly during the spring months. Thus, although the stream does not support a sport fishery on a year-around basis, it is important during some seasons. Sampling will be conducted again next spring in an attempt to determine seasonal use by other species of fish."

A later statement by Mr. Elzer dated October 24, 1972, is as follows:

> "Review of the proposed railroad spur up Sarpy Creek continued. Further sampling in the headwater reaches of the stream produced byprinids and suckers, and suggested that the stream does support fish year-around."

The proposed track grade construction provides one creek crossing of Sarpy Creek proper and one at the east fork. Spans of these crossings are not of great magnitude and will not contact the normal stream bed. There are two minor channel relocations necessitated by slope construction. Such relocations will not affect the length of the stream and for all practical purposes

will not interfere with fish life. Other than during flood or high water stage proposed track construction will not affect fish life in Sarpy Creek and during high water or flood stage fish life will be affected only to the extent that the grade approach to the bridge over Sarpy Creek proper may be in the high water area.

ARCHAEOLOGICAL SURVEY

The University of Montana Statewide Archaeological Survey examined those lands to be traversed by the proposed branch line, pursuant to an agreement between the University of Montana Foundation and Burlington Northern. The entire proposed line of railroad was surveyed with the exception of those lands owned by Montana Garvarich. When settlement is reached between Burlington Northern and Garvarich, the archaeological survey will be completed.

The University of Montana Statewide Survey has certified that no significant archaeological antiquities will be destroyed by construction in the examined area.

ALTERNATIVE POWER GENERATION

The coal now scheduled for removal from the Sarpy Creek area will be transported to existing coal-burning power plants in Minnesota and Wisconsin. By substituting this low-sulfur content coal for high sulfur content coal, these utilities will be able to reduce their sulfur dioxide emissions immediately and thereby achieve compliance with federal and state emission standards.

In theory a number of alternatives to low sulfur coal are available to the concerned utilities but these alternatives are either not available within the required period of time or entail environmental concerns of equal or greater magnitude to those surrounding the instant project.

The continued use by the utilities of existing high sulfur content coals does not represent a realistic alternative since federal and state emission standards have eliminated this alternative by means of their sulfur dioxide emission regulations. The continued use of the existing fuel sources would merely represent a transferral of the environmental concerns associated with the coal mining itself from the Sarpy Creek area to a midwestern or eastern coal field.

A number of projects have been undertaken in an effort to bring the emissions of existing power plants into the range of acceptability specified by current and proposed regulations without requiring a change in fuel source. These projects involved either treatment of the coal before burning

to remove its objectionable components, introduction of chemicals into the power plant boiler to remove the sulfur at the time of combustion or treatment of the power plant stack gases to eliminate all pollutants prior to their discharge into the atmosphere. In spite of intensive experimentation by both governmental agencies and private concerns, these alternatives have yet to prove workable on the scale required by large power plants under the widely varying and rapidly changing conditions found in power plant operations. The complexity of these processes precludes widespread adoption within the time limits imposed by existing regulations.

Experiments designed to render high sulfur coal environmentally acceptable by pretreatment have centered on the chemical removal of the sulfur in coal or the conversion of the coal to another fuel, such as gas or char, by a process which will extract the sulfur as an easily controllable by-product. These experiments are only now moving from the laboratory to the pilot plant or demonstration plant stage. With processes of such complexity, one would expect these projects to remain at the pilot plant stage for a significant interval before sufficient data has been obtained to allow the construction and reliable operation of commercial size units. This interval would likely be measured in years and months rather than in weeks and days. Once the technical and economic feasibility of these processes has been demonstrated in the pilot plant, another lengthy interval will

precede adoption in commercial plants to allow for the design and construction of the new facilities. In this context, these processes would appear to offer more hope for application to the problems of the 1980's or later, rather than to those of the 1970's. In contrast, the use of low sulfur coal offers an immediate solution to today's problem.

At first glance, the processes for control of sulfur dioxide through either injection of chemicals into the boiler or treatment of the power plant stack gases seem to be closer to commercial application than those involving treatment of the coal. This presumption would be based upon the fact that a number of processes have already been placed into operation on a demonstration plant basis and a number of others are currently being elevated to this status. Upon closer investigation, however, several serious obstacles to this widespread commercial adoption become apparent. While serious problems are expected in the pilot plant tests of any complex process, the problems being experienced in these test units are exceptionally formidable and in some cases cast a shadow of doubt upon the ultimate role in combating air pollution. For the most part, the technical problems stem from the scale of power plant operations and the enormous quantities of gases which must be handled by the treatment systems plus the inherent difficulties involved in mating a continuous chemical process, which operates most effectively in a steady state environment, to the rapid and frequent changes in power plant operations necessitated by the electric utility industry's unique inability to store

its product. In addition to the technical problems, these units are proving to be very expensive and complex construction projects particularly when mated to an existing plant. Therefore capital acquisition and construction lead time will both tend to delay the widespread adoption of a stack gas process even after it has been proven technically feasible. Again these processes do not offer the prospect for immediate relief from low sulfur dioxide emissions that can be obtained by using low sulfur coal.

The conversion of existing coal fired power plants to alternate fuels, such as gas and oil, has been employed in several instances, but such a change is not without serious environmental consequences. Within the area in question, natural gas supplies are insufficient to support the conversion of major power plants to gas firing without eliminating much of the present consumption of gas within the area by homeowners, institutions, commercial establishments and industrial concerns. Such reordering of priorities not only would involve substantial expense and inconvenience to the non-utility gas user but also could represent a step backwards environmentally if the alternate fuels chosen by the non-utility gas users was less acceptable environmentally. The relative contributions to total air pollution by the utility community and the non-utility community is still a subject of some controversy, but a mere redistribution of existing fuel supplies between the two groups would not be expected to provide any dramatic relief from air pollution.

With this insufficiency of natural gas supply, oil becomes the only readily available alternative fuel for existing coal burning power plants. Oil is similar to coal in that sulfur is a naturally occuring component and sulfur dioxide emissions can be generated by oil burning power plants. Thus it is necessary to obtain a low sulfur content oil to assure a low level of sulfur dioxide emissions. Most oils require some form of treatment during refining to remove sulfur to be made environmentally acceptable for power plant use. Widespread conversion of power plants to oil would ultimately lead to a demand for more refinery construction, a move that would involve substantial environmental concerns within the area of proposed refinery construction. In the absence of additional refinery capacity the utility and non-utility communities would be forced to compete for limited quantities of low-sulfur oil, which is analogous to the natural gas supply problem previously discussed. With the nation's increasing reliance upon imported oil, it seems appropriate to assume that the conversion of power plants to oil will ultimately lead to an increased rate of oil importation. Since a large percentage of imported oil is shipped to the United States by ocean-going tankers, tanker operations would ultimately be increased by these power plant conversions with an attendant increase in environmental concern by residents of coastal areas. Therefore fuel conversion does not represent the elimination of all environment problems but often leads to a redistribution of environmental problems.

The most extreme alternative to existing emission problems would be the complete abandonment of current coal burning power plants and the erection of new replacement plants specifically designed to eliminate the air pollution problems experienced by the current plants. This could be achieved by a variety of methods; such as erection of mine-mouth coal-fired plants which would transmit the electricity to the load centers by long distance transmission lines; the erection of new plants at the load centers, using nuclear energy sources; or the development of new non-fuel burning plants, such as hydro-electric, geothermal or solar energy plants. The adoption of any of these alternatives not only would delay relief from immediate air pollution problems, but would be exceedingly expensive and would introduce a host of new environmental concerns.

The erection of mine-mouth power plants is an effective means of relieving air pollution problems in major consuming areas, but in some instances this relief is achieved by transferring a portion of the problem to another region. The environmental implications of coal mining itself will be no different with a mine mouth plant than with a plant located near the load center with the possible exception of the small increase in coal consumption necessary to offset the line losses experienced in long distance transmission of electricity. In some instances, the erection of the transmission system may be a concern to the citizens of the area through

which these lines pass, particularly if these facilities did not previously exist and the citizens perceive the facilities to be an intrusion. In most instances the majority of rail lines required to move coal to the load centers already exist and constitute an accepted part of the local environment. While a mine mouth plant burning low sulfur coal will emit very little sulfur dioxide, the visible emissions from even the cleanest of plants may constitute a matter of environmental concern within an area possessing extremely clean air. A modern mine mouth plant can be built using cooling towers and consume very little water relative to a plant of comparable size without cooling towers. Even this relatively small quantity of water may be of concern within an arid or semi-arid region particularly if competition were to develop between alternative water uses.

The erection of replacement plants that do not use coal does not constitute an escape from the environmental concerns. The use of oil or gas as a fuel for a new plant would present the same type of problems outlined earlier in the discussion of fuel conversion for existing plants. The use of synthetic gas in a new plant would still require facilities for the movement of coal to the plant. The alternative of nuclear energy is accompanied by a host of environmental concerns, as demonstrated in numerous situations throughout the nation.

The lead time required for replacement of existing power plant capacity with electricity generated from non-fuel consuming sources is difficult to estimate. It could conservatively be estimated that lead time for replacement would be even longer than those situations involving conventional plant designs. Plant sites for the generation of electricity from falling water or tides are limited in number by the very nature of the processes themselves. In addition, the environmental concerns generated by a large scale power producing dam and reservoir are substantial. Although less is known about the field of geothermal power generation, the number of possible plant sites using this technique appear to be limited. The relative lack of experience with geothermal power generation makes an analysis of the long run environmental effects of such plants difficult to determine. While solar energy may on the surface represent a power generation technique possessing relatively few environmental problems in the functioning of equipment, the land area required for a solar collection system may be sufficiently large as to become an item of future environmental concern.

Secondary Environmental Consequences

Mining of coal in the Sarpy Creek area by Westmoreland Resources will help fulfill the public need for cleaner energy. The coal has less than 1% sulfur content, thereby enabling consumers to meet state and federal clean air standards upon the burning thereof. The coal will be produced by Westmoreland Resources from its mine in the Sarpy Creek area at a time when the nation is faced with an energy shortage which it is alleged could threaten national security and further jeopardize international balance of payments if the United States is forced to continue to rely increasingly on politically unstable sources of foreign fuel. The nation's economic structure is dependent upon continuing availability of energy. Any substantial gap in the energy supply and demand relationship will have serious adverse impact on the nation's economy, resulting in spiraling fuel prices and reduced production, layoffs and unemployment. Midwestern power generating plants to which Westmoreland will ship the coal require Montana low-sulfur content coal to meet stack emission standards of the Environmental Protection Agency. Present eastern coal supplies contain in excess of 3% to 5% sulfur, and sometimes greater sulfur content, whereas Montana coals contain less than 1%. Mixture of Montana and eastern coal supplies provide

generating plants with a fuel whose consumption meets EPA standards for stack emissions. New power generating plant standards prescribe that sulfur content of stack emissions must not exceed 1.2 pounds per 1,000,000 BTU which can be adequately met through use of Montana coals. Standards for existing plants located in Minnesota provide sulfur dioxide content must not exceed 1.75 pounds per 1,000,000 BTU after 1974, and in Illinois must not exceed 1.8 pounds of sulfur dioxide per 1,000,000 BTU after 1975.

The coal to be mined at Sarpy Creek will be used by Northern States Power, Wisconsin Power & Light, Dairyland Power, and Interstate Power Company. These companies in their fossil fuel plants, are now burning Illinois or Western Kentucky coal. This coal has a sulfur content of 3% to 3½%. The Sarpy Creek coal will have a sulfur content of .3% to .7%. The Montana coal will be burned in existing plants where even if commercial sulfur removal systems were available, space would not permit installation. In addition, there is no large scale sulfur removal system available.

NORTHERN STATES POWER

NSP operates in South Dakota, Iowa, Wisconsin and Minnesota. It serves approximately 3 million people in 630 communities over a 40,000 square mile territory. In 1971 NSP

had 3,283 megawatts on stream. NSP has the following coal fired generating plants: Black Dog, High Bridge, Island, Minnesota Valley, Red Wing, Riverside, Whitney, Wilmarth, Winona, and Allan King. Approximately 1,900,000 tons of low-sulfur coal will be burned in these plants through 1975. The need for Montana coal will increase to 2,900,000 tons from 1976 to 1993.

DAIRYLAND POWER COOPERATIVE

Dairyland Power Cooperative serves 27 utilities in Wisconsin, Iowa, Minnesota and Illinois. The following is a list of these power companies:

WISCONSIN

1. Barron Electric Coop., Barron
2. Buffalo Electric Coop., Alma
3. Chippewa Valley Electric Coop., Cornell
4. Clark Electric Coop., Greenwood
5. Crawford Electric Coop., Gays Mills
6. Dunn County Electric Coop., Menomonie
7. Eau Clair Electric Coop., Fall Creek
8. Grant Electric Coop., Lancaster
9. Jackson Electric Coop., Black River Falls
10. Jump River Electric Coop., Inc., Ladysmith
11. Lafayette Electric Coop., Darlington
12. Oakdale Coop. Electrical Assn., Oakdale
13. Pierce-Pepin Electric Coop., Ellsworth
14. Polk-Burnett Electric Coop., Centuria
15. Richland Coop. Electric Assn., Richland Center
16. St. Croix County Electric Coop., Baldwin
17. Taylor County Electric Coop., Medford
18. Trempealeau Electric Coop., Arcadia
19. Vernon Electric Coop., Westby

IOWA

20. Allamakee-Clayton Electric Coop., Inc., Postville
21. Cedar Valley Electric Coop., St. Ansgar
22. Hawkeye Tri-County Electric Coop., Cresco
23. Winnebago Rural Electric Coop. Assn., Thompson

MINNESOTA

24. Freeborn-Mower Electric Coop., Albert Lea
25. People's Coop. Power Assn., Inc. Rochester
26. Tri-County Electric Coop., Rushford

ILLINOIS

27. Jo-Carroll Electric Coop., Inc., Elizabeth

In 1971 Dairyland Power served 121,427 customers and billed 1,664,379,837 kilowatt hours.

INTERSTATE POWER COMPANY

Interstate Power Company serves customers in Iowa, Minnesota, Wisconsin and Illinois. The billed kilowatt hours in 1971 amounted to 2,409,493 and was distributed to 134,920 customers. Interstate Power exports power to Kansas City over a 345 kilovolt system and to St. Louis over a 345 kilovolt system. Interstate Power operates coal fired plants in Minnesota at Fox Lake; in Iowa at Dubuque, Milton L. Capp, Lansing and Mason City; and in Illinois at Clinton.

WISCONSIN POWER & LIGHT

Wisconsin Power & Light has 728 megawatts of coal fired plants on stream. The plants are: Black Hawk, Edgewater, Nelson Dewey, and Rock River.

ENVIRONMENTAL EFFECTS OF RAIL OPERATIONS

Train operations represent the primary transportation system most suitable for the movement of large quantities of coal in eastern Montana. Pipelines and conveyors are specific transportation systems not readily modified to serve the variety of needs to which train operation can be adapted. A rail line or a heavy duty truck road would be required to handle movements of mining equipment and supplies into the mine site even if a conveyor or pipeline system was utilized to handle coal from the mine. Train operations constitute the most practical economic alternatives and are more compatible with environmental considerations.

In terms of land use, a railroad is substantially more efficient than a highway. Upon completion of construction, a railroad track and right-of-way occupies approximately 15 feet of space laterally with the remainder of the right-of-way being restored to natural vegetation. Roads built for use during railroad construction will be reseeded once construction has been completed. In addition these haul roads will be watered during construction to alleviate dust. In contrast, a paved heavy duty highway would cover approximately 50 feet of space laterally and thus represent a more formidible obstacle to the movement of wildlife. Similarly, the visual impact of the highway would be greater than that of a rail line located in the same area. A conveyor would occupy

an amount of space equivalent to that occupied by the railroad but would extend vertically above the ground and constitute a greater obstacle to movement. A pipeline could, of course, be located underground and not be observable at ground level, however, the cost factor would then become a major concern.

The exceptional efficiency of railroad propulsion plays a role in environmental concerns as well as economic concerns. A single unit train of 110 cars carrying 100 tons of coal per car would require the use of approximately 5 diesel-electric locomotives representing 15,000 diesel horsepower per train. Movement of an equivalent tonnage of coal by truck would require a fleet of 550 trucks carrying 20 tons of coal per truck. Using an average of 250 diesel horsepower per truck, this fleet would represent more than 135,000 diesel horsepower. This nine fold increase in engine capacity would contribute to increased fuel consumption with an ultimate effect on the environment within oil producing and refining areas.

Railroad exhaust emissions are substantially lower than motor truck on a per-ton-mile basis. For each net ton-mile of freight moved, it is estimated that truck emissions are presently 3.7 times as high as those of railroad locomotives. This advantage for the railroads is a result of the lower rolling resistance of steel wheels on steel rails, as compared with pneumatic tires on pavement surfaces, and the economies of scale associated with longer trains. The present total exhaust emissions from freight trains constitute about 1 percent of the national total of air-pollutant mass emissions

from all sources. Burlington Northern locomotives are maintained to be in compliance with existing federal and state emission standards so that there will not be a significant impact on the environment.

The primary propulsion for both coal slurry pipelines and conveyors would be electricity. Thus a substantial demand for electrical energy would be created for either of such lines. In addition, coal slurry pipelines use water as the carrying vehicle for the coal particles. This not only creates a demand for substantial quantities of water at the origin of the movement but also creates a water treatment problem in removing coal fines from the water at the destination as well as a problem of disposition of the water at destination.

The rail alternative is also favored in considerations of service frequency. A daily movement of one 110 car trainload of coal would lead to two rail movements per day, one loaded and one empty. Thus any given section of track would be occupied by a train only twice per day for a total of 20 to 30 minutes. The use of trucks would lead to 1,100 truck movements daily, 550 loaded and 550 empty. If they are spaced evenly throughout the day, a truck would pass a given point on the road every 80 seconds. This frequency has implications in terms of noise generation and hazard to wildlife. In the noise catagory, a conveyor would likely operate 24 hours per day.

The damp loading of coal at the mine and railroad equipment is designed and operated so that a dust problem is not

created along the route of travel either during the loaded outbound movement or the empty return movement.

The nature of subsequent development also favors the rail line. While rail lines or highways allow development along the right-of-way, pipelines and conveyors do not permit such flexibility. The nature of rail service is such that the development is more readily controlled along rail lines than it is along highways, especially in the absence of strong zoning regulations. In addition, rail lines do not invite the casual traveler as readily as do highways.

The Crow Tribe of Indians

The Crow tribe of Indians, Crow Agency Montana has a very real economic interest in the mining and transportation of coal from the Westmoreland mine. There are approximately 5,000 members of this tribe which have leased the coal lands to Westmoreland and will receive a rental of $30,000 per year and a royalty payment for coal mined of approximately $700,000 per year for twenty years based on leases of two areas of 14,900 acres and 16,100 acres. The royalty payment is based upon the number of tons of coal mined and will not be paid if coal is not mined.

The Crow Indians will receive priority in hiring at the mine operation.

CONCLUSION

Construction and operation of the branch line, approximately 36 miles in length, will not have a substantial impact on the environment.

The construction and operation can be classified as a long term productivity facility and the use of the land for the branch line will not affect the local environment to any substantial degree.

The primary purpose of the line is to facilitate movement of low sulphur coal to electric power generation facilities located in Minnesota, Wisconsin and Iowa. The low sulphur coal, when burned has low sulphur emission characteristics with the result of reduced release of emission pollutants into the atmosphere.

Construction has been planned for preservation of public and private property adjacent to the line with minimal effect on natural surroundings. Upon completion of construction the railroad right-of-way will be reseeded.

Burlington Northern Inc. recognizes that preservation and enhancement of the environment must be fulfilled and will assume its ecological responsibility in the construction and operation of the rail line which will aid in eliminating adverse environmental problems at other locations in the United States through the transportation of low sulphur coal.

BURLINGTON NORTHERN INC.

EXHIBIT A
Hysham 8
Substation
TO ST. PAUL
NORTHERN PACIFIC
Cemetery
Myers
Windmill
Ranch
TREASURE COUNTY
BIG HORN COUNTY
ROSEBUD COUNTY
Underground pipeline
Clark Ranch
BURLINGTON NORTHERN INC.
SARPY CREEK BRANCH
NEAR
HYSHAM MONT
NO SCALE

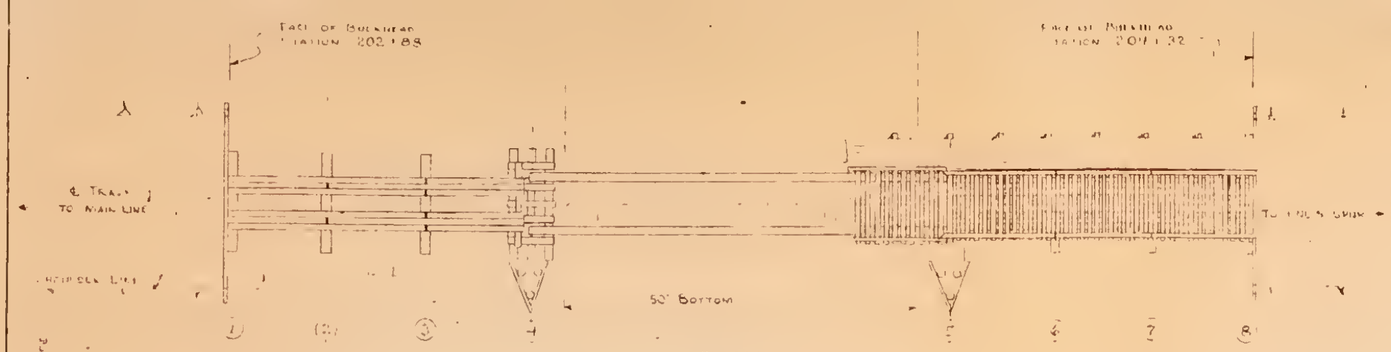
—

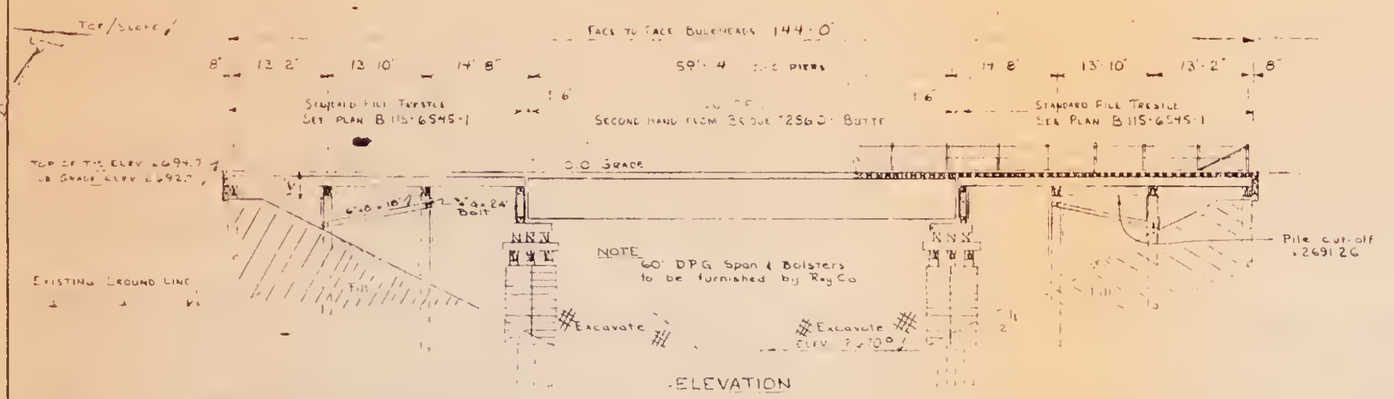
SEC 16 T3N R37E
FROM CENTER LINE OF
TRACK FACING SOUTH
OCT 4 1972

3/
CENTER LINE OF
FACING NORTH
OCT 4 1972

EC 15 T2N R37E
OM CENTER LINE OF
RACK FACING SOUTH
OCT 4 1972

SEC 16 TCN R37E
FROM CENTER LINE OF
TRACK FACING NORTH
OCT 4 1972



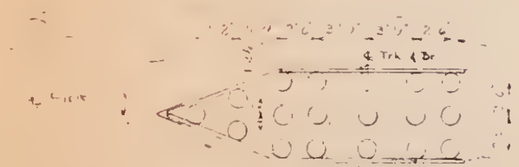


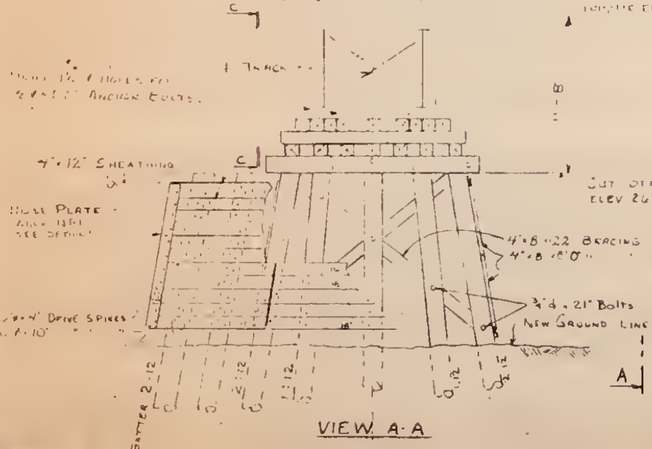
NOTES:
SEE DRAWING B115-6545-1 FOR TIMBER NOTES AND DETAILS OF STANDARD TIMBER TRESTLE APPROACH SPANS.

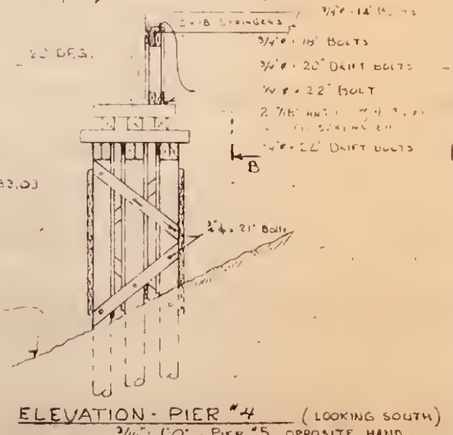
WALK AND RAILING TO BE AS DETAILED ON DRAWING B115 6545-2 EXCEPT 3'-12" WALK PLANKS IN LIEU OF 3'-10" TO BE USED ON STEEL SPANS

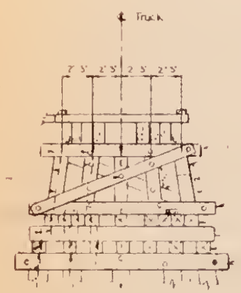
PILING TO BE DRIVEN TO 30 TONS MINIMUM BEARING CAPACITY

Bridge Timbers shall conform to BN Inc. grading & treating requirements of circulars M/W 20 and M/W 13 dated 11/25/72 and Chalk recorded. Timber piling shall conform to material and treating requirements of circulars M/W 21 & M/W 13 dated 11/25/72 and 6/30/11
Field treatment of timber and pile cut off protection as noted and shown Drawing B115-6545-1

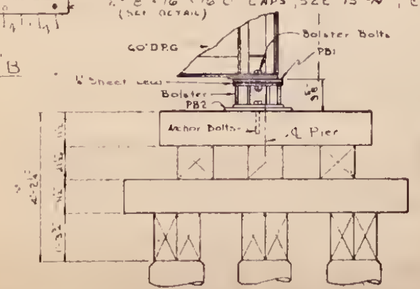








2-6"x12"x12'0" CAPS, SIZE 11½"
12"x12"x3'-5½" POSTS Rgh. Cut to maintain overall depth
4"x8"x14' BRACING
2-6"x12"x17'0" SILLS, SIZE 11½"
12"x12"x6" BLOCKING SIZE "
12"x12"x14' "
12"x12"x8' "
2-8"x16"x16'0" CAPS, SIZE 15¾", CPI (SEE DETAIL)



LIST OF DRAWINGS

SHEET	TITLE
M-014-72	GENERAL PLAN AND PIER DETAILS
M-024-72	D.P.G. DECK PLAN AND BILL OF MATLS
B115-6545-1	STANDARD PLAN TREATED PILE TRESTLE
B115-6545-2	" " DETAILS OF WALKS & RAILINGS
315 5854-2 & 3	General Plan & Steel Design of 60 DPG Span

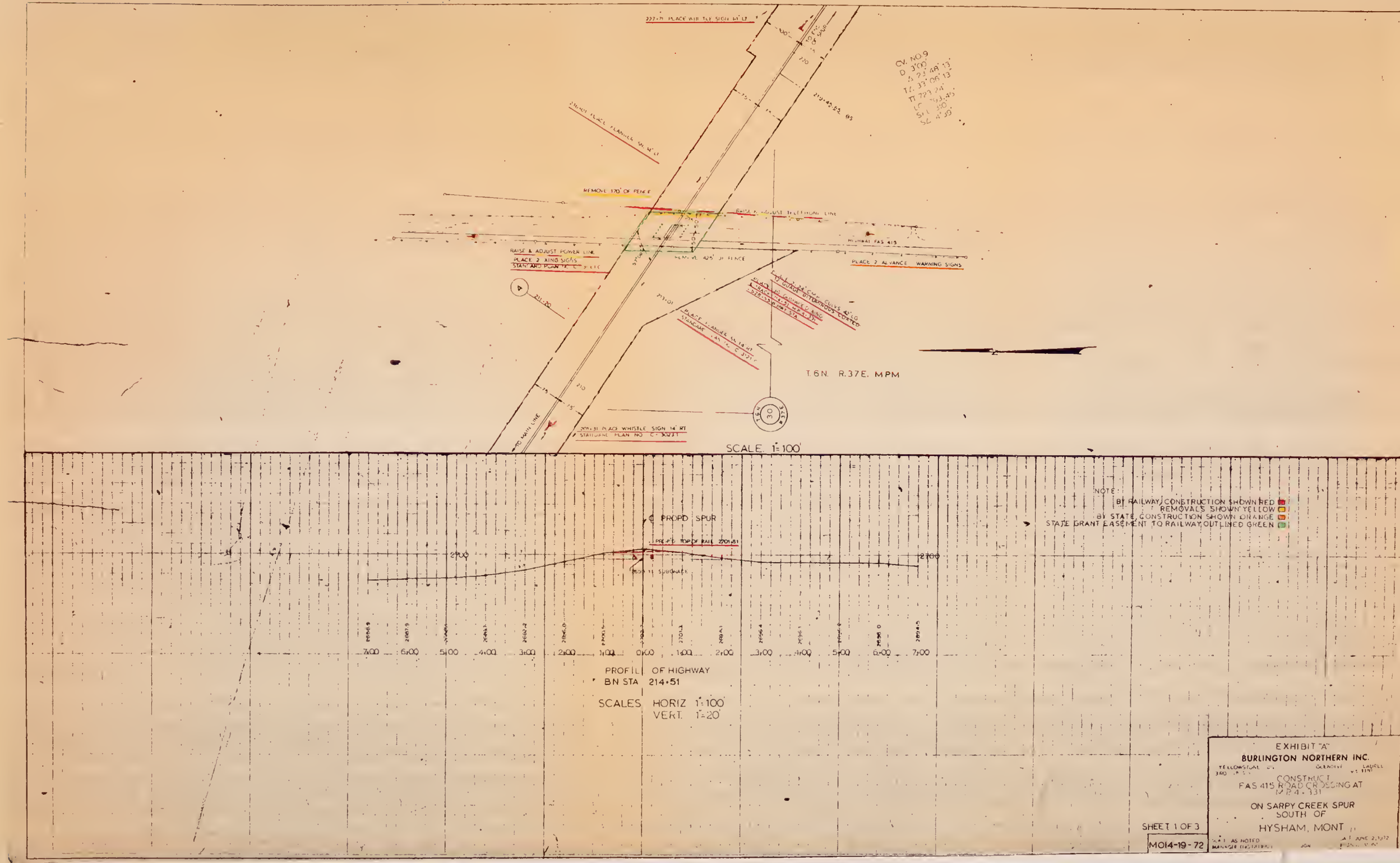
RECOMMENDED: N. E. Ekstrom, Director Bridge Engineering
APPROVED: B. H. Anderson, Asst Vice President Engineering
AFE

ORG	354-6736-1	M-014-15-72
QK. DRN		

BURLINGTON NORTHERN INC.
YELLOWSTONE DIV, GLENDIVE SUB. DIV, TO LAUREL

BRIDGE No. 3.8
OVER SARPY CREEK
GENERAL PLAN AND PIER DETAILS
AT
HYSHAM, MONTANA

SCALE: AS NOTED
MANAGER ENGINEERING
DATE: JUNE 1, 1973
BILLINGS, MONT


227+71 PLACE WHISTLE SIGN 14' LT
CV. NO. 9
D 3°00'
Δ 23° 48' 13"
T. 33° 06' 13"
T 729.24'
L 1403.45'
SL 3°30'
SC 4°59'
210+40.53 BS
210+40 PLACE PLANER SIGN 14' LT
REMOVE 170' OF FENCE
RAISE & ADJUST POWER LINE
PLACE 2 XING SIGNS
STANDARD PLAN NO. C-30231
REMOVE 425' OF FENCE
RAISE & ADJUST TELEPHONE LINE
MONTANA PAS 415
PLACE 2 ALVANCE WARNING SIGNS
211+00
213+01
PLACE PLANER SIGN 14' RT
STANDARD PLAN NO. C-30231
T.6N. R.37E. MPM
T.6N. 30 R.37E.
209+31 PLACE WHISTLE SIGN 14' RT
STANDARD PLAN NO. C-30231
SCALE 1"=100'
℄ PROPD SPUR
PROP'D TOP OF RAIL 2701.81
PROFILE OF HIGHWAY
BN STA 214+51
SCALES HORIZ 1"=100
VERT. 1"=20'
NOTE:
BY RAILWAY CONSTRUCTION SHOWN RED
REMOVALS SHOWN YELLOW
BY STATE, CONSTRUCTION SHOWN ORANGE
STATE GRANT EASEMENT TO RAILWAY OUTLINED GREEN
EXHIBIT "A"
BURLINGTON NORTHERN INC.
CONSTRUCT
FAS 415 ROAD CROSSING AT
M.P. 4-331
ON SARPY CREEK SPUR
SOUTH OF
HYSHAM, MONT.
SHEET 1 OF 3
M014-19-72

To Main Line

To End of Spur

PLACE ADVANCE WARN SIGN

REMOVE FENCE

74 CMP 44" 18 GAUGE CULVERT

H.P.C. CURVE
D=9°-22 LT
D=14°-00'
T=384.5
L=602.4
R=382.0

Cv No 14
D - 2°00'
Spl. = 210'
TΔ = 16°37'30"
TT = 549.1-4
SE = 2.4

T. 5 N. R. 37 E. MPM

PLAN VIEW
SCALE 1" = 100'

NOTE:
BY RAILWAY, CONSTRUCTION SHOWN RED
REMOVALS SHOWN YELLOW
BY STATE, CONSTRUCTION SHOWN ORANGE
STATE GRANT EASEMENT TO RAILWAY OUTLINED GREEN

TOP OF RAIL ELEV 28234

SUBGRADE ELEV 28207

Profile of Highway
Scales: Horiz 1"=40'
Vert 1"=20'

2850

2800

2750

28234 28320 28304 28290 28269 28260 28234 28207 28142 28054 28006 27993 27976

B.N. STA 526+24

6+00 5+00 4+00 3+00 2+00 1+00 0+00 1+00 2+00 3+00 4+00 5+00

EXHIBIT A
BURLINGTON NORTHERN INC.
YELLOWSTONE DIV
CONSTRUCT
F.A.S. 415 ROAD CROSSING AT
M.P. 9.510.4
ON SARPY CREEK SPUR
SOUTH OF
HYSHAM, MONT

SHEET 2 OF 3

M-014 2170

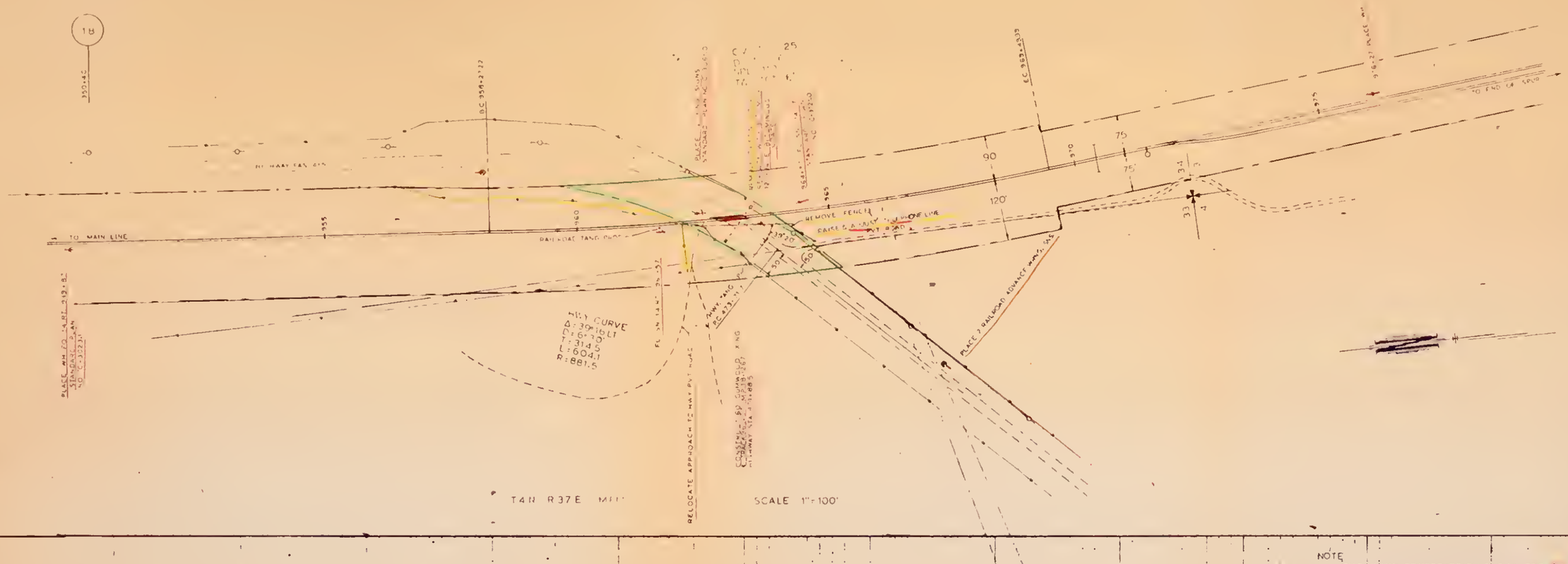


EXHIBIT 'A'

BURLINGTON NORTHERN INC.

YELLOWSTONE ... GLENDIVE ... LAUREL
3RD SUB DIV. ... MILES

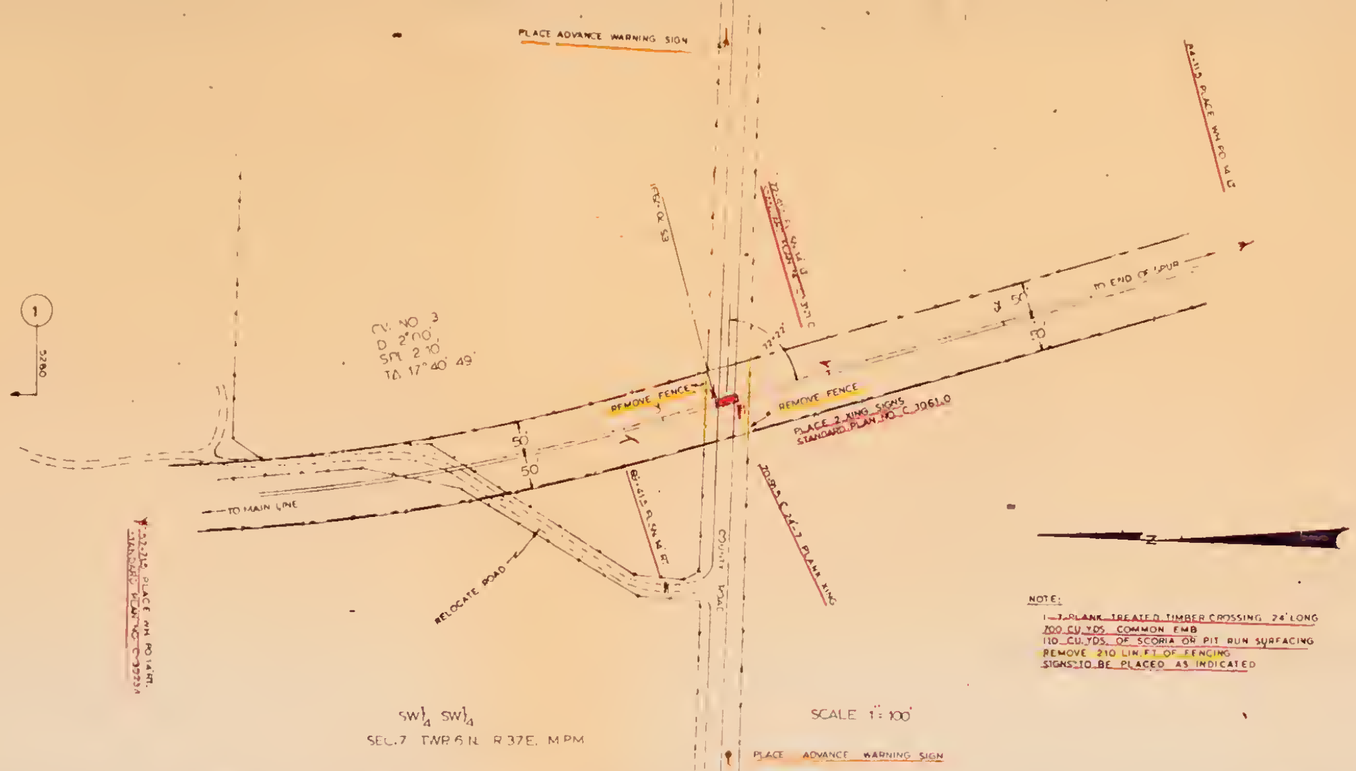
CONSTRUCT
FAS 115 ROAD CROSS. AT
NW, 18-14-37
ON SARPY CREEK SPUR
SOUTH OF
HYSHAM, MONT.

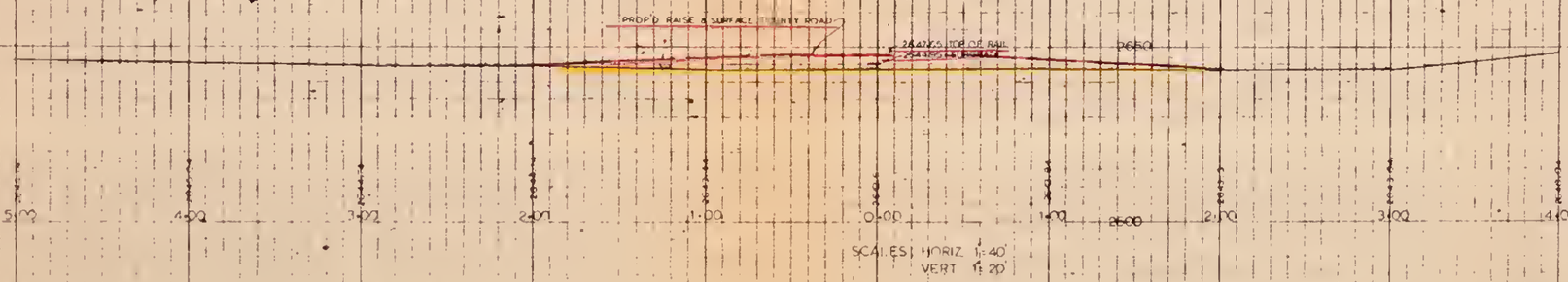
SCALE AS NOTED
MANAGER ENGINEERING

DRN. ... DATE JUNE 15, 1972
BILLINGS, MONT.

SHEET 3 OF 3

M014-23-72


PLACE ADVANCE WARNING SIGN
RR-312 PLACE MH PO 14 ST
CV NO 3
D 2°00'
SPI 2.10'
TA 17°40' 49"
1 2280
REMOVE FENCE
REMOVE FENCE
PLACE 2 XING SIGNS STANDARD PLAN NO C-10610
TO END OF SPUR
50
50
50
TO MAIN LINE
RELOCATE ROAD
RR-312 PLACE MH PO 14 ST
RR-312 PLACE MH PO 14 ST UNDERGRADE PLAN NO C-10223
SARPY CREEK SPUR
N
NOTE:
1-7 PLANK TREATED TIMBER CROSSING 24' LONG
200 CU YDS COMMON END
110 CU YDS OF SCORIA OR PIT RUN SURFACING
REMOVE 210 LIN FT OF FENCING
SIGNS TO BE PLACED AS INDICATED
SW¼ SW¼
SEC. 7 TWP 6 N R 37 E. M.P.M.
SCALE 1" = 100'
PLACE ADVANCE WARNING SIGN



BURLINGTON NORTHERN INC.

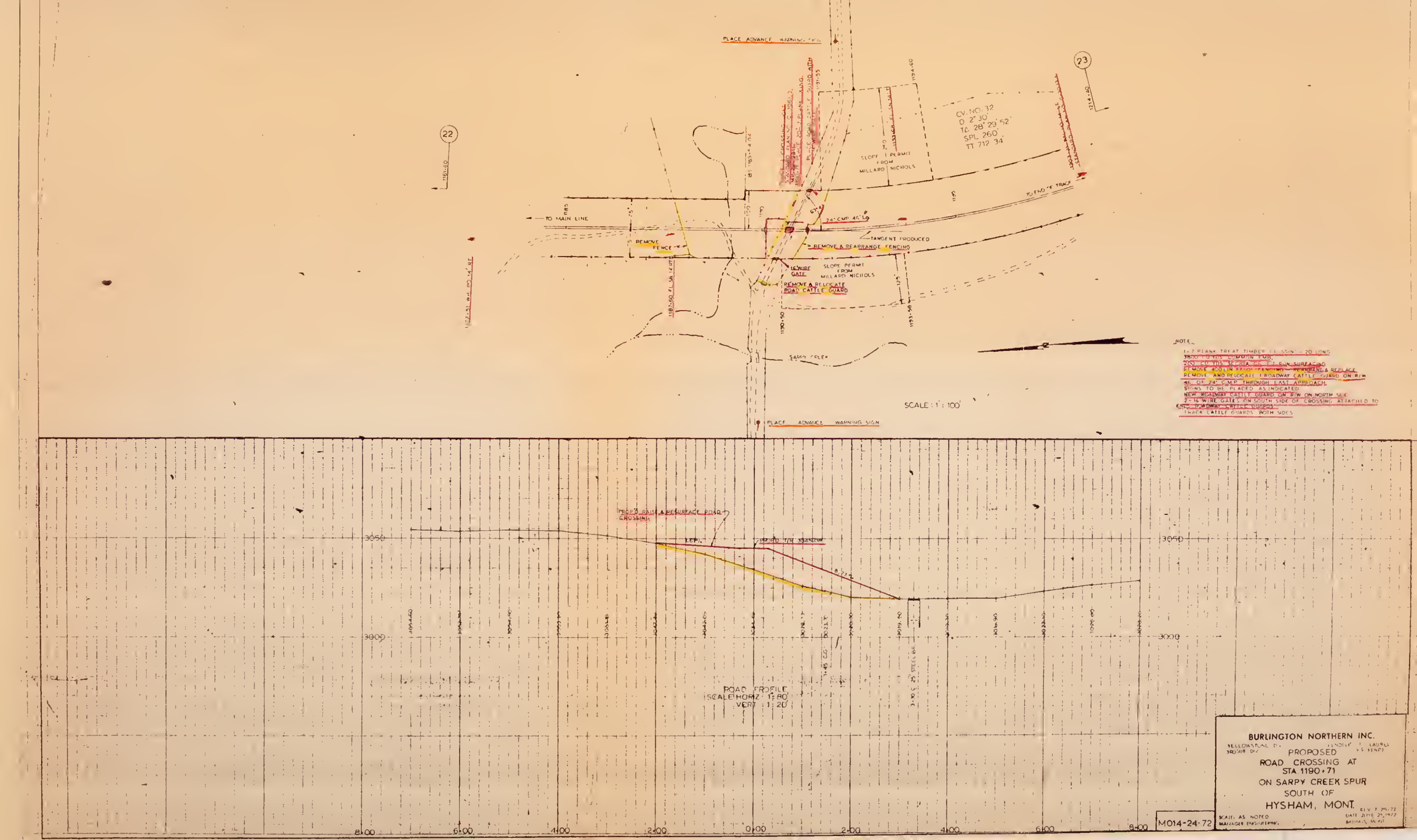
YELLOWSTONE LINE — CUSTER LINE — LAND GRANT

PROPOSED
ROAD CROSSING AT
STA 70+91.5
ON SARPY CREEK SPUR
SOUTH OF
HYSHAM, MONT.

SCALE AS NOTED
MANAGER ENGINEERING

DATE JUNE 1972
BY D.G.S.

M014-20-72


PLACE ADVANCE WARNING SIGN
22
23
1156+60
1214+50
1193+60
1191+55
1193+40
1194+60
CV. NO. 32
D 2° 30'
Ta 28° 29' 52"
SPL 260'
TT 712' 34"
SLOPE PERMIT FROM MILLARD NICHOLS
TO END OF TRACK
TO MAIN LINE
24" CMP 46' LG
REMOVE FENCE
REMOVE & REARRANGE FENCING
TANGENT PRODUCED
16' WIRE GATE
SLOPE PERMIT FROM MILLARD NICHOLS
REMOVE & RELOCATE ROAD CATTLE GUARD
1190+50
1193+50
SARPY CREEK
SCALE : 1" : 100'
PLACE ADVANCE WARNING SIGN
NOTE:
1- 7 PLANK TREAT TIMBER CROSSING - 20' LONG
TO BE USED FOR
2ND MP 103 SPECIAL 16' 1-2 RUN SURFACING
REMOVE ROTTEN CROSSTIES AS REQUIRED & REPLACE
REMOVE AND RELOCATE ROADWAY CATTLE GUARD ON R/W
46' OF 24" CMP THROUGH EAST APPROACH
SIGNS TO BE PLACED AS INDICATED
NEW ROADWAY CATTLE GUARD ON R/W ON NORTH SIDE
2 - 16' WIRE GATES ON SOUTH SIDE OF CROSSING ATTACHED TO
EXIST. ROADWAY CATTLE GUARDS
TRACK CATTLE GUARDS BOTH SIDES
PREP'D RAISE & RESURFACE ROAD CROSSING
1.65%
ROAD TO 3030 STA
8.71%
3050
3000
3045.25 25# STEEL RR
ROAD PROFILE
SCALE HORZ 1" 80'
VERT 1" 20'
8+00
6+00
4+00
2+00
0+00
2+00
4+00
6+00
8+00
BURLINGTON NORTHERN INC.
YELLOWSTONE DIV. TENDOY & LAUREL VS STENGEL
BILLINGS DIV.
PROPOSED
ROAD CROSSING AT
STA 1190+71
ON SARPY CREEK SPUR
SOUTH OF
HYSHAM, MONT.
M014-24-72
SCALE AS NOTED
MANAGER ENGINEERING
DATE JUNE 21, 1972
BILLINGS, MONT.

PLACE ADVANCE WARNING SIGN

CV NO. 41
D = 1°00'
SPL = 110'
TΔ = 15°13' 55"

27

1425+69

ES 1449+21.42

1449+72 WM RD 14.2'

1447+50 FL SN 14.2'

TO MAIN LINE

75'

75'

1450

SETOUT TRACK 500' LG

1455+90 FL SN 14.2'

1456+42 FL SN 14.0'

24" CMP 38' LG

PLACE CROSSING SIGNS
STANDARD PLAN 54 C 6010
PLACE CATTLE GUARD

1460+76 - 76' CMP

1461+42 FL SN 14 LF

1460

94°17'

75'

75'

BS 1462+44.8

1472+42 WM RD 14 LF

28

1478+42

TO END OF SPUR

CV NO. 42
D = 1°00'
SPL = 110'
TΔ = 10°40' 23"

NOTE
1 - PLANK TREATED TIMBER CROSSING 20' LONG
1300 CU YDS COMMON EMB
375 CU YDS SCORIA OR PIT RUN SURFACING
2 - RAD CATTLE GUARDS
SIGNS TO BE PLACED AS INDICATED
38 OF 24" CSP METAL PIPE CULVERT

SCALE 1" = 100'

PLACE ADVANCE WARNING SIGN

℄ PROPD SPUR

EXIST RAISE & RESURFACE ROAD

PROPD TOP OF RAIL 3140.1

SUBGRADE 3139.33

7+00 6+00 5+00 4+00 3+00 2+00 1+00 0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00

PROFILE OF COUNTY ROAD
SCALES: HORIZ 1" = 100'
VERT. 1" = 20'

BN STA 1458+92.6

BURLINGTON NORTHERN INC.
YELLOWSTONE DIV / GLENDIVE TO LAUREL 3RD SUB DIV VS 1(EB)

PROPOSED
ROAD CROSSING AT
STA. 1458+92.6
ON SARPY CREEK SPUR
SOUTH OF
HYSHAM, MONT.

M-014-29-72

SCALE AS NOTED
MANAGER ENGINEERING

DATE JULY 24 1972
BILLINGS, MONT